

WE CLAIM:

1 1. An enclosure for an optical communications device that joins with a connector
2 of an optical cable, the enclosure comprising:

3 a base portion;

4 a lid portion having focusing elements and affixed to the base portion, wherein the lid
5 portion and the base portion are adapted to receive at least a portion of the optical
6 communications device therebetween; and

7 at least one alignment member formed on the lid portion, the alignment member
8 adapted to interface with the connector to align the connector relative to lid portion.

1 2. The enclosure of claim 1 wherein the lid portion is recessed to receive at least
2 a portion of the optical communications device therebetween.

1 3. The enclosure of claim 1 wherein the at least one alignment member is metal
2 deposited into the shape of the at least one alignment member.

1 4. The enclosure of claim 3 further comprising a preliminary layer on the lid
2 portion to promote adhesion of the deposited metal.

1 5. The enclosure of claim 1 wherein the at least one alignment member is a
2 prefabricated alignment member bonded to the lid portion.

1 6. The enclosure of claim 5 further comprising a preliminary metal layer on the
2 lid portion, and wherein the prefabricated alignment member comprises metal welded to the
3 preliminary metal layer.

7 segmenting the affixed substrate and base material into at least two portions of affixed
8 substrate and base material, each portion having at least one alignment member.

1 14. The method of claim 13 wherein forming at least two alignment members
2 comprises depositing material in the shape of at least two alignment members.

1 15. The method of claim 14 further comprising using a mold to shape the
2 deposited material.

1004441
1004442
1004443
1004444
1004445
1004446
1004447
1004448
1004449
1004450
1004451
1004452
1004453
1004454
1004455
1004456
1004457
1004458
1004459
1004460
1004461
1004462
1004463
1004464
1004465
1004466
1004467
1004468
1004469
1004470
1004471
1004472
1004473
1004474
1004475
1004476
1004477
1004478
1004479
1004480
1004481
1004482
1004483
1004484
1004485
1004486
1004487
1004488
1004489
1004490
1004491
1004492
1004493
1004494
1004495
1004496
1004497
1004498
1004499
1004500

16. The method of claim 14 wherein the material is a metal deposited in a
chemical vapor deposition process.

17. The method of claim 14 wherein the material is a curable material that bonds
with the substrate as it hardens.

18. The method of claim 14 further comprising the step of depositing a
preliminary layer on the substrate to promote adhesion of the at least two alignment
members.

1 19. The method of claim 13 wherein forming at least two alignment members
2 comprises molding the at least two alignment members together with the substrate.

1 20. The method of claim 13 wherein forming the at least two alignment members
2 comprises machining the substrate to form the at least two alignment members.

1 21. The method of claim 13 where forming the at least two alignment members
2 comprises etching the substrate using photolithography techniques to form the at least two
3 alignment members.

1 22. The method of claim 14 wherein forming the at least two alignment members
2 on the substrate comprises affixing at least two prefabricated alignment members to the
3 substrate.

1 23. The method of claim 14 wherein forming the at least two alignment members
2 on the substrate comprises affixing an overlay having at least two alignment members
3 thereon to the substrate.

1 24. The method of claim 14 further comprising etching the substrate using
2 photolithography techniques to form at least one recess; and
3 wherein the step of depositing material in the shape of at least two alignment
4 members further comprises depositing material into the at least one recess in the shape of at
5 least one of the at least two alignment members.

1 25. A structure divisible into two or more optical communication devices, each
2 optical communications device having at least one optical electrical device, and each optical
3 communications device adapted to join with a connector of an optical cable, the structure
4 comprising:

5 a first substrate having at least two optical electrical devices thereon;

6 a second substrate affixed to the first substrate with the at least two optical

7 electrical devices positioned therebetween; and

8 at least two alignment members formed on the second substrate and each
9 alignment member adapted to interface with the connector to align the connector in relation
10 to the second substrate.

1 26. The structure of claim 25 wherein at least one of the at least two alignment
2 members is a prefabricated alignment member bonded to the second substrate.

1 27. The structure of claim 25 wherein at least one of the at least two alignment
2 members is shaped from the second substrate.

28. The structure of claim 26 wherein at least one of the at least two alignment
members is a microsphere.

1 29. The structure of claim 25 further comprising at least two optical components
2 on the second substrate.

1 30. The structure of claim 26 wherein at least one of the at least two alignment
2 members is formed on an overlay and affixed to the second substrate.

1 31. The structure of claim 25 wherein at least a portion of the second substrate is
2 transparent and the second substrate further comprises at least two optical devices formed in
3 the second substrate.

1 32. An electro-optical interconnect device for coupling to a parallel fiber-optic
2 cable:

3 an electro-optical transducer;

4 a base including an integrated circuit electrically connected to said electro-optical
5 transducer; and

6 a lid including an array of optical elements optically coupled to said electro-optical
7 transducer, said lid assembly including at least one pin for engaging said cable, said lid
8 assembly and said base assembly collectively enclosing said electro-optical transducer.

1 33. A device as recited in claim 32 wherein said electro-optical transducer is
2 disposed between said integrated circuit and said array of optical elements.

FOEFF" hshz000F